

What is Claimed is:

1. An automotive sound pressure level (SPL) meter that is temporarily mountable in a motor vehicle, comprising:

an SPL meter including a housing, a pressure sensor, a mode selector input device, and a display, wherein the SPL meter is configured for use within a motor vehicle to measure sound pressure levels within the motor vehicle; and

a temporary mounting mechanism coupled to the housing of the SPL meter, wherein the temporary mounting mechanism affixes the SPL meter to a surface within the motor vehicle, such that the SPL meter is selectively removable from the motor vehicle.

2. The automotive SPL meter of claim 1, wherein the pressure sensor is internal to the SPL meter.

3. The automotive SPL meter of claim 1, wherein the pressure sensor includes a diaphragm comprising polytetrafluoroethylene (PTFE) film.

4. The automotive SPL meter of claim 1, wherein the pressure sensor includes a diaphragm of thickness between approximately 0.005 millimeters and approximately 0.025 millimeters.

5. The automotive SPL meter of claim 1, wherein the pressure sensor includes a diaphragm of a material with physical characteristics that are substantially insensitive to at least one of temperature, humidity, and high decibel acoustic energy.

6. The automotive SPL meter of claim 1, wherein the pressure sensor includes a back plate with no more than two back plate holes.

7. The automotive SPL meter of claim 1, wherein the housing of the SPL meter includes a single sound/pressure hole for receiving acoustic energy detectable by the pressure sensor.

8. The automotive SPL meter of claim 1, wherein the pressure sensor includes a back plate with a back plate hole of a diameter of between approximately 0.9 to 1.3 millimeters.

9. The automotive SPL meter of claim 1, wherein the pressure sensor includes a non-conducting gasket between a pressure sensor diaphragm and a pressure sensor back plate, wherein the non-conducting gasket has a thickness between approximately 0.1 millimeters and 0.2 millimeters.

10. The automotive SPL meter of claim 1, wherein the pressure sensor is a microphone.

11. The automotive SPL meter of claim 1, wherein the temporary mounting mechanism comprises a bracket mounted to the housing, wherein the bracket pivots relative to the housing.

12. The automotive SPL meter of claim 1, wherein the temporary mounting mechanism comprises at least one suction cup coupled to the housing.

13. The automotive SPL meter of claim 12, wherein the temporary mounting mechanism further comprises a bracket mounted to the housing, wherein the bracket pivots relative to the housing, and wherein the at least one suction cup is mounted on the bracket.

14. The automotive SPL meter of claim 1, wherein the temporary mounting mechanism comprises a non-pivoting, clip-like bracket coupled to the housing, wherein the clip-like bracket is suitable for temporarily mounting the SPL meter on a sun visor within the motor vehicle.

15. The automotive SPL meter of claim 1, wherein the temporary mounting mechanism comprises a loop and hook fastener.

16. The automotive SPL meter of claim 1, wherein the temporary mounting mechanism comprises a magnetic material coupled to the housing.

17. The automotive SPL meter of claim 1, wherein the temporary mounting mechanism comprises an integrated mounting bracket that attaches to a mounting base affixed to the interior of the motor vehicle.

18. The automotive SPL meter of claim 1, wherein the display includes a range indicator and a sub-range indicator, wherein a combined reading of the range indicator and the sub-range indicator indicates a measured decibel level.

19. The automotive SPL meter of claim 18, wherein the range indicator indicates which one of a plurality of sub-ranges of decibels is being displayed by the sub-range indicator, and wherein the sub-range indicator comprises a series of indicators, wherein the measured decibel level within the sub-range is indicated by illumination of a number of consecutive
5 indicators.

20. The automotive SPL meter of claim 1, wherein the display includes a digital display indicating a measured decibel level.

21. The automotive SPL meter of claim 1, wherein the housing is substantially box-shaped and includes opposing top and bottom surfaces, two opposing side surfaces, a front face and a rear face opposing the front face.

22. The automotive SPL meter of claim 21, wherein the front face is smaller than the top and bottom faces.

23. The automotive SPL meter of claim 21, wherein the top and bottom surfaces are larger than the two opposing side surfaces and the front and rear faces.

24. The automotive SPL meter of claim 21, wherein the display and the mode selector input device are disposed on the front face.

25. The automotive SPL meter of claim 21, wherein the pressure sensor receives acoustic energy through an aperture in the front face.

26. The automotive SPL meter of claim 21, wherein the pressure sensor receives acoustic energy through an aperture in the rear face.

27. The automotive SPL meter of claim 21, wherein the temporary mounting mechanism comprises a bracket pivotally coupled to the two opposing side surfaces of the housing.

28. The automotive SPL meter of claim 21, wherein the temporary mounting mechanism comprises a clip-like bracket adjacent the top surface of the housing.

29. The automotive SPL meter of claim 21, wherein the temporary mounting mechanism is oriented relative to the housing such that, when the SPL meter is mounted to the surface within the motor vehicle, the front face of the housing is visible to an occupant seated in the motor vehicle.

30. The automotive SPL meter of claim 1, wherein the mode selector input device includes a maximum mode selector that controls the display to indicate a maximum measured decibel level.

31. The automotive SPL meter of claim 30, wherein the SPL meter stores the maximum measured decibel level in response to turning off power to the SPL meter.

32. The automotive SPL meter of claim 1, wherein the mode selector input device includes a continuous mode selector that controls the display to continuously indicate a current measured decibel level.

33. A method of measuring a sound pressure level (SPL) within a motor vehicle by operating an SPL meter having a display, the method comprising:

(a) temporarily mounting the SPL meter to a surface within the motor vehicle via a temporary mounting mechanism coupled to the SPL meter;

(b) measuring an acoustic energy within the motor vehicle to obtain a measured SPL

reading; and

(c) displaying the measured SPL reading on a display of the SPL meter.

34. The method of claim 33, wherein the SPL meter is temporarily mounted to the surface within the motor vehicle with suction cups.

35. The method of claim 33, wherein the SPL meter is temporarily mounted to the surface within the motor vehicle using a clip-like bracket coupled to the SPL meter.

36. The method of claim 33, wherein the SPL meter is temporarily mounted to the surface within the motor vehicle using at least one of: a hook and loop fastener attached to the SPL meter; a magnetic material attached to the SPL meter; an adhesive material attached to the SPL meter; and mounting based affixed to the surface within the motor vehicle.

37. The method of claim 33, wherein, upon mounting an SPL meter within the motor vehicle, the display of the SPL meter is oriented toward an occupant seated within the motor vehicle.

38. The method of claim 33, wherein, upon mounting an SPL meter within the motor vehicle, the display of the SPL meter is oriented toward at least one exterior window of the motor vehicle.

39. The method of claim 33, wherein (b) includes detecting a contribution to the measured sound pressure level from an acoustic energy frequency as high as 16 kHz.

40. The method of claim 33, wherein (b) further includes measuring acoustic energy with a microphone-based transducer.

41. The method of claim 33, wherein (c) further includes displaying the measured SPL reading as a series of illuminated indicators, wherein each illuminated indicator represents a specific number of decibels.

42. The method of claim 41, wherein (c) further includes displaying the measured SPL reading as an illuminated decibel range indicator and a series of illuminated decibel sub-range indicators.

43. The method of claim 33, wherein (c) further includes displaying the measured SPL reading via a digital display.

44. The method of claim 33, wherein the SPL meter is further used to determine a maximum sound pressure level (SPL) reading from among a plurality of SPL readings, wherein each of said plurality of SPL readings is measured from within one of a plurality of motor vehicles, the method further comprising:

5 (d) comparing the measured SPL reading to a current maximum SPL reading stored within the SPL meter; and

(e) replacing the current maximum SPL reading with the measured SPL reading upon determining that the measured SPL reading exceeds the current maximum SPL reading.

45. The method of claim 44, further comprising:

(f) storing the current maximum SPL reading in non-volatile memory.

46. The method of claim 45, wherein (f) further includes storing the current maximum SPL reading in non-volatile memory in response to an operator initiating a power-down.